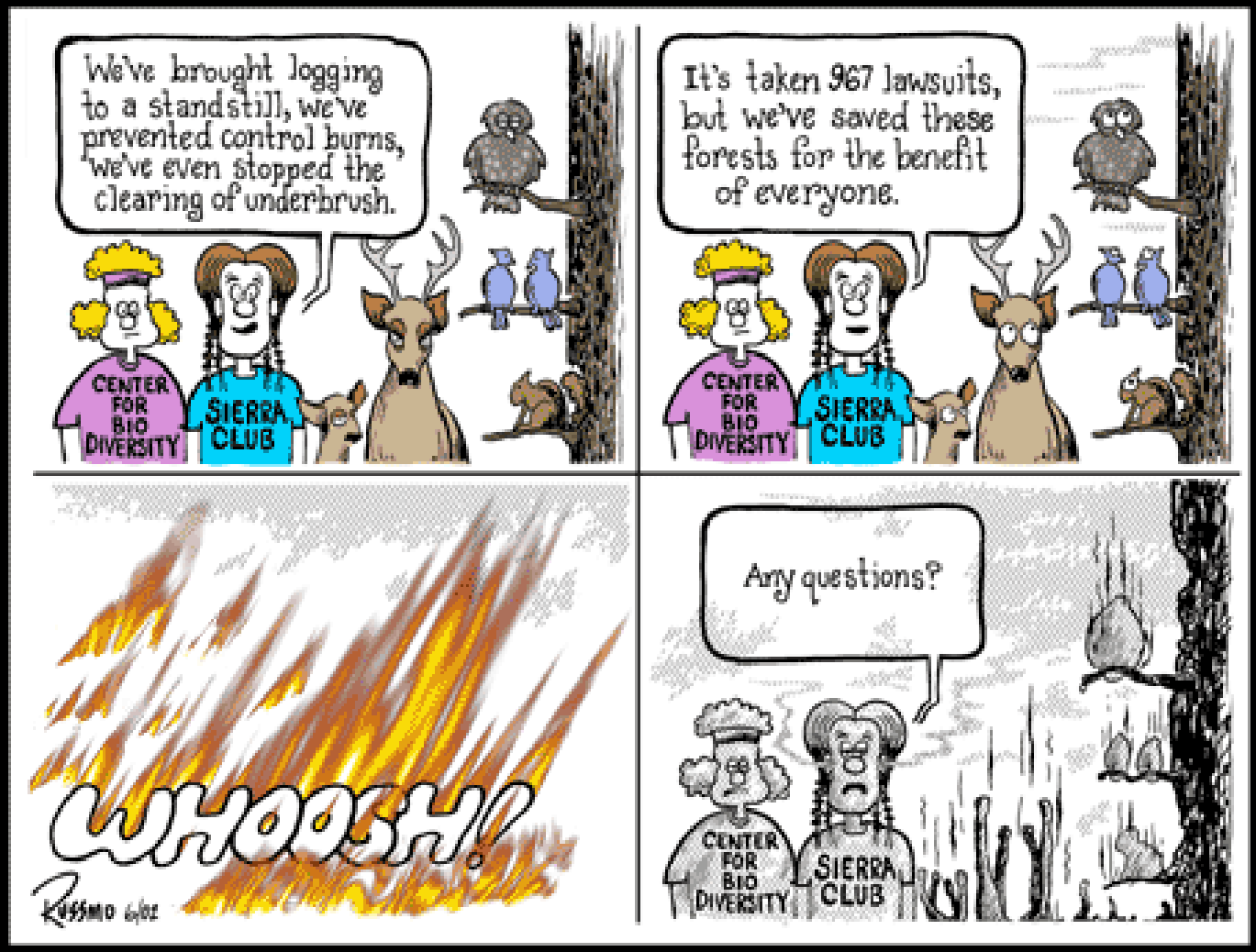

We've brought logging to a standstill, we've prevented control burns, we've even stopped the clearing of underbrush.
CENTER FOR BIO DIVERSITY
SIERRA CLUB
It's taken 967 lawsuits, but we've saved these forests for the benefit of everyone.
CENTER FOR BIO DIVERSITY
SIERRA CLUB
WHOOSH!
Any questions?
CENTER FOR BIO DIVERSITY
SIERRA CLUB

Importance of Fire in the Ecosystem

Good Fire?

Plan Preparation

You can no more get to where you don't know where you're going, than you got to where you think you are, from where you don't know where you've been. (Bethea)

"Fire may well be compared to a two-edged sword which requires judgement, care, and experience to properly handle, and I obviously cannot be responsible for the way in which fire is actually used on any ground but my own."

(famed Georgia naturalist and land manager)

Herbert

Prescription

- A written statement defining the range of conditions of temperature, humidity, wind direction and speed, fuel moisture, soil moisture and geographical area under which a fire will be allowed to burn, or be ignited to obtain given OBJECTIVES.

Elements of a Prescription

- Purpose and Objectives
- Safety Plan
- Description of Burning Unit
- Map of Burning Unit
- Weather Factors
- Fuel Conditions
- Season and time of day
- Smoke Screening Plan
- Publicity
- Legal Requirements
- Firing Plan
- Control and Mop-Up
- Evaluation

Goals and Objectives

- Reasons
- Expectations
- Fire Behavior

Goals @ Zuni Pine Barrens

- Increase herbaceous diversity of the pine/scrub oak sand hill natural community.
- Reduce canopy density.
- Reduce Loblolly Pine component.
- Reduce shrub layer.

- Objectives should be MEASURABLE in order to evaluate the effects of the treatment and to improve future treatments.

Poor Objectives

- I want to kill off some of the brush.
- I saw a special on PBS about prescribed burning and wanted to try it..

Better Objectives

- Increase oak fruiting by 30% for quail and turkey habitat improvement.
- Increase native grasses for forage by 40%.
- Reduce logging debris by 80% - 90%.
- Top kill 90% or more of all hardwoods less than 10 feet tall.
- Reduce the understory canopy by 70%.

Zuni Pine Barrens Objectives

- Burn 40 to 60% of the surface fuels in a mosaic pattern, exposing mineral soil.
- Keep Longleaf pine mortality less than 25%
- Reduce Loblolly pine regeneration by 95%.
- Top kill 70 to 80% of the woody vegetation in the shrub layer.
- Increase and then maintain herbaceous cover to $\geq$15%.

Objectives Are Also Used For

- Making clear to everyone what's expected,
  - Burners
  - Cooperators
  - Landowners
  - Public
- The individual writing the prescription
- Evaluating the project

Zuni Pine Barrens Safety Considerations

- Large fuel build-up
- Narrow firelines
- Poor footing in wet areas
- Snags
- Poison Ivy
- Yellow Jackets

Special Considerations

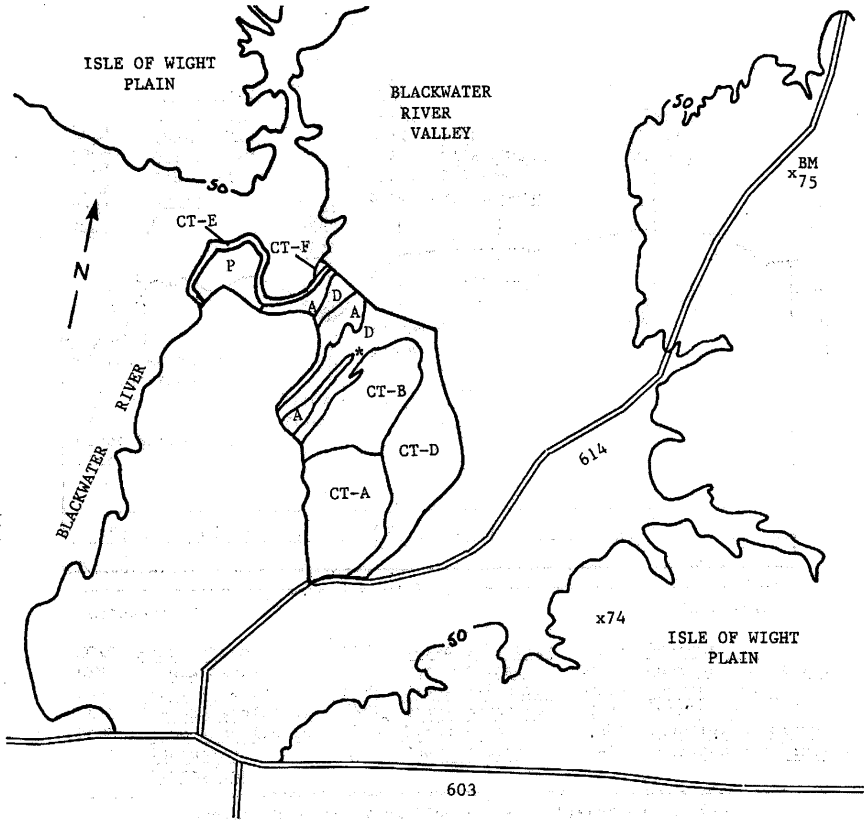
- Automated weather station

Description of the Burning Unit

- Location and Number of Acres
- Record of Previous Burning
- Complete Description, Including:
  - Over-story: type, density, size
  - Under-story: type, density, size
  - Fuels: type & loading
  - Soil type and topography
  - Rare, Threatened and Endangered Species

Map of Burning Unit

- Unit Boundaries
- Land Ownership
- Established Fire Lines
- Firing, Holding Details
- Structures
- Contingencies

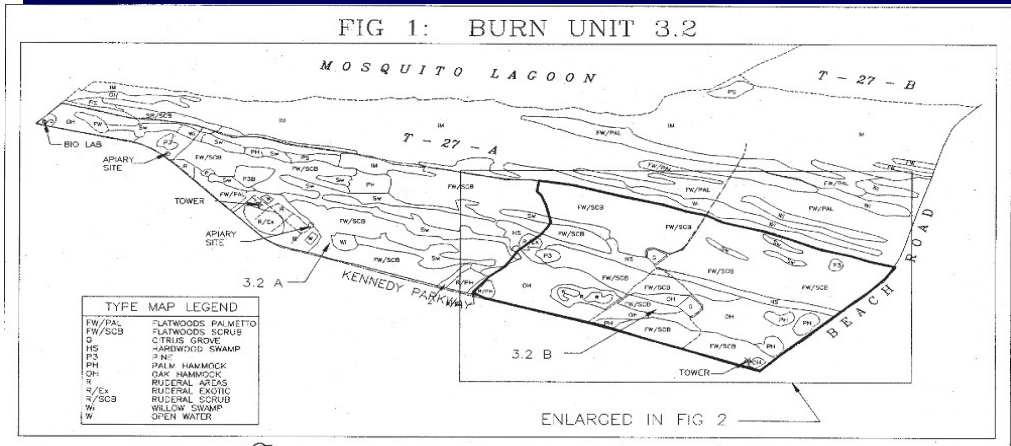


Vegetation of the Zuni Pine Barrens. CT-A Longleaf pine/turkey oak (replaced by loblolly pine/turkey oak in places). CT-B Pond pine/ericad flat (former longleaf pine savannah). CT-D Black gum swamp. CT-E River bluff hardwoods. CT-F Alluvial flat hardwoods and cypress. * = CT-C Oak slopes transitional between CT-B and CT-D. P = young loblolly pine plantation on a lower terrace. Mapped from field work and USGS color infrared aerial photography. The 50 foot contour marks the toe of the Sangamon-age escarpment which comprises the river valley wall.

From: Frost, 1982.

Burn Unit

Zuni Pine Barrens



Sources of Weather Information

www.srh.noaa.gov

Hydrology/Fire

www.dof.virginia.gov

Fire ... Weather

www.weather.gov

National Weather Service Southern Region - For Work, For Fun, For Safety, For Life. - Microsoft Internet Explorer

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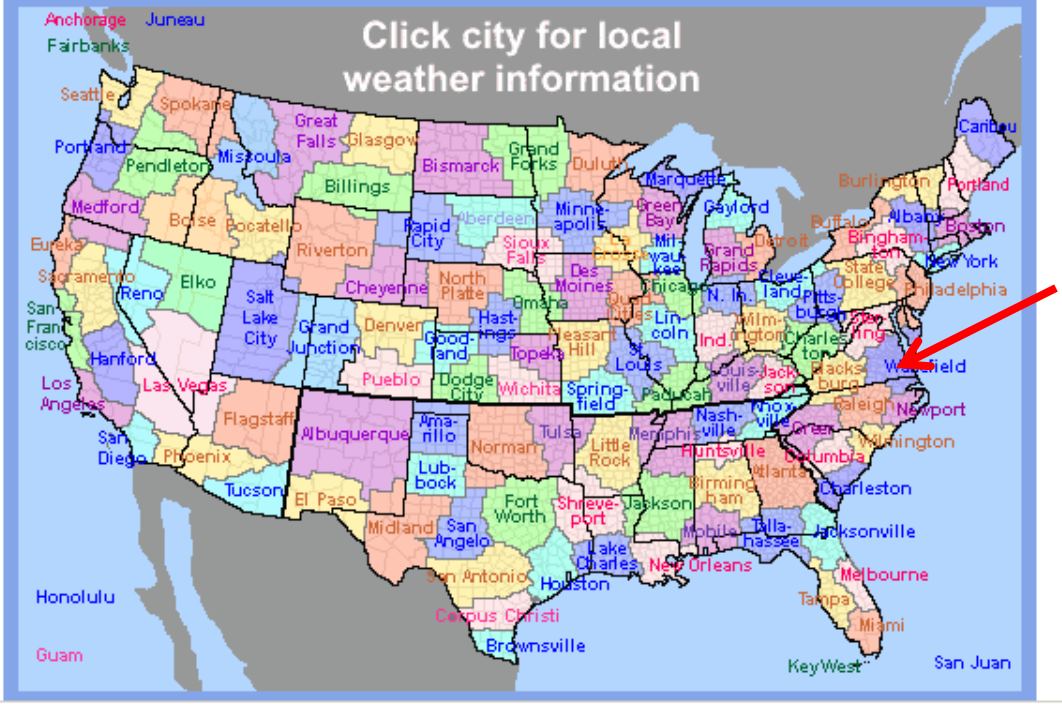
- Building Leaders for a Solid Tomorrow-Blast
- Partners

Contact Us
SR-SRH.Webmaster @noaa.gov

National Weather Service Homepages | River Forecast Center Homepages | Center Weather Service Units Homepages



National Weather Service • Since

Internet

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National Weather Service Forecast Office - WFO Wakefield, VA - Microsoft Internet Explorer

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Local forecast by "City, St or Zip"

City, St Go

Current Hazards
Virginia
North Carolina
Maryland
National Warnings
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Hazardous Weather
Day 2 TSTM Outlook
Send a Storm Report

Current Conditions
Observations
Satellite Images
Rivers
Rivers & Lakes AHPS

Radar Imagery
Wakefield VA Radar
Nationwide

Forecasts
Public Forecasts
Graphic Forecasts
PDA Users
Tropical Weather
Winter Weather
Severe Weather
Aviation
Marine & Tides
Rip Current
Fire Weather

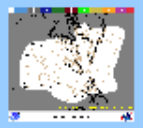
Climate
Local Data

TOP NEWS OF THE DAY

NOAA WEATHER RADIO SIGNAL PROBLEMS NEW!

SKYWARN

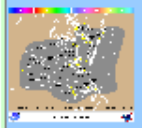
- Snow Storm Dec 26, 2004
- PAST TOP NEWS EVENTS ARCHIVE
- Needing Past Weather Data???



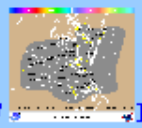
HAZARDOUS WEATHER

National Digital Forecast Database

TOTAL SNOW & ICE AMOUNTS



SNOW



ICE

Hear NOAA Weather Radio on the Web

Spotters should activate based on display Map below showing severe weather Outlooks, Watches and Warnings.

Quick Glimpse at the Weather

Click Here to see all color definitions

Wakefield, VA

Click on the map below for the latest forecast.

Read watches, warnings & advisories.

Zoom Out

Flood Statement

Special Weather Statement

Internet

Start Inbox - Microsoft Outlook Microsoft PowerPoint - [... National Weather Ser... 12:19 PM

THE UPPER 30S. NORTHWEST WINDS 10 TO 15 MPH.

$$

VAZ093-096-097-112200-
CHESAPEAKE-ISLE OF WIGHT-SUFFOLK-
INCLUDING THE CITY OF...WINDSOR
332 AM EST TUE JAN 11 2005

	TODAY	TONIGHT	WED
CLOUD COVER	PCLDY	PCLDY	PCLDY
PRECIP TYPE	NONE	NONE	NONE
CHANCE PRECIP (%)	10	10	0
TEMP (24HR TREND)	62 (+4)	46 (+10)	73
MAX/MIN RH (%)	51 (-1)	100 (0)	51
WND20FT2MIN/EARLY(MPH)	LGT/VAR	LGT/VAR	LGT/VAR
WND20FT2MIN/LATE(MPH)	LGT/VAR	LGT/VAR	SW 5
PRECIP AMOUNT	0.00	0.00	0.00
PRECIP DURATION	0	0	0
MIXING HIGHT(FT-AGL)	3030		2440
TRANSPORT WIND (MPH)	SE 13		SW 23
VENT RATE (FT-MPH)	40010		55440
DISPERSION (EVENING)		VERY POOR	
LAL	1	1	1
HAINES INDEX	4	3	4

REMARKS...NONE.

.FORECAST FOR DAYS 3 THROUGH 7...
.WEDNESDAY NIGHT...PARTLY CLOUDY. LOWS IN THE UPPER 50S. SOUTH WINDS
5 TO 10 MPH.
.THURSDAY...PARTLY CLOUDY WITH A SLIGHT CHANCE OF SHOWERS THEN
MOSTLY CLOUDY WITH SHOWERS LIKELY IN THE AFTERNOON AND EVENING.
HIGHS IN THE MID 70S. MINIMUM RH 59 PERCENT DURING THE DAY. SOUTH
WINDS 15 TO 20 MPH.
.FRIDAY...CLOUDY WITH SHOWERS LIKELY THEN MOSTLY SUNNY WITH A CHANCE
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50S. HIGHS IN THE MID 50S. WEST WINDS 5 TO 10 MPH SHIFTING TO THE
NORTH 10 TO 15 MPH IN THE AFTERNOON AND EVENING

Mixing Height

- Mixing heights of less than 500 meters (or approximately 1700 feet) are often associated with air pollution episodes.

THE UPPER 30S. NORTHWEST WINDS 10 TO 15 MPH.

$$

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WND20FT2MIN/EARLY(MPH)	LGT/VAR	LGT/VAR	LGT/VAR
WND20FT2MIN/LATE(MPH)	LGT/VAR	LGT/VAR	SW 5
PRECIP AMOUNT	0.00	0.00	0.00
PRECIP DURATION	0	0	0
MIXING HIGHT(FT-AGL)	3030		2440
TRANSPORT WIND (MPH)	SE 13		SW 23
VENT RATE (FT-MPH)	40010		55440
DISPERSION (EVENING)		VERY POOR	
LAL	1	1	1
HAINES INDEX	4	3	4

REMARKS...NONE.

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Transport Winds

- Transport wind speeds of less than 9 miles per hour are indicators of stagnant conditions which often result in air pollution episodes.

THE UPPER 30S. NORTHWEST WINDS 10 TO 15 MPH.

$$

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WND20FT2MIN/LATE(MPH)	LGT/VAR	LGT/VAR	SW 5
PRECIP AMOUNT	0.00	0.00	0.00
PRECIP DURATION	0	0	0
MIXING HIGHT(FT-AGL)	3030		2440
TRANSPORT WIND (MPH)	SE 13		SW 23
VENT RATE (FT-MPH)	40010		55440
DISPERSION (EVENING)		VERY POOR	
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REMARKS...NONE.

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NORTH 10 TO 15 MPH IN THE AFTERNOON AND EVENING

Prescription Parameters	Acceptable Range	
	High	Low
Temperature	90	60
Relative Humidity	65	25
Wind Speed	15	?
Mixing Height		500m
Cumulative Severity Index	500	300

Pg 20 Orange book remember growing season vs dormant season parameters

THE UPPER 30S. NORTHWEST WINDS 10 TO 15 MPH.

$$

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WND20FT2MIN/EARLY(MPH)	LGT/VAR	LGT/VAR	LGT/VAR
WND20FT2MIN/LATE(MPH)	LGT/VAR	LGT/VAR	SW 5
PRECIP AMOUNT	0.00	0.00	0.00
PRECIP DURATION	0	0	0
MIXING HIGHT(FT-AGL)	3030		2440
TRANSPORT WIND (MPH)	SE 13		SW 23
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50S. HIGHS IN THE MID 50S. WEST WINDS 5 TO 10 MPH SHIFTING TO THE
NORTH 10 TO 15 MPH IN THE AFTERNOON AND EVENING

Virginia Department of Forestry

CSI No Burning Parameters

>500 during the Growing Season

>300 during the Dormant Season

- Fuel Conditions combined with Weather Conditions and Topography will determine Fire Behavior.

Season and Time of Day

Publicity & Notification

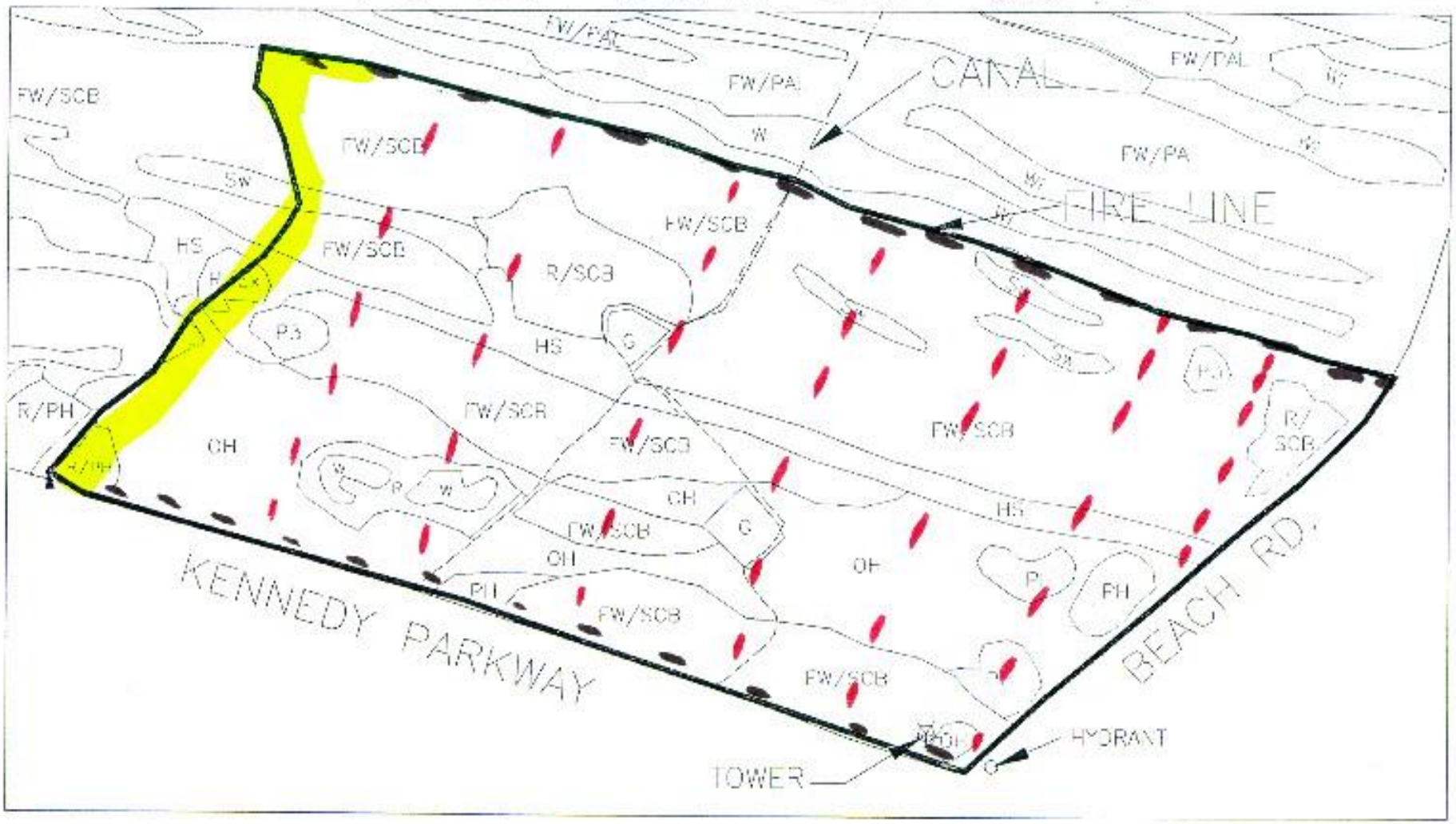
Firing Plan

Narrative and Map

- Planned time of day
- Fire method, sequence, alternatives
- Lines to establish and fire off
- Personnel and equipment
- Location and number of reinforcements
- Instructions and assignments

Fig 11. Setting a fire in grassland with a propane torch.

FIG 2: BURN UNIT 3.2 B



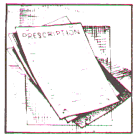
Control and Mop-Up

- Measures for containment
- Mop-up promptly and completely within 100 feet of all control lines
- Escape plan is vital
- Plan for smoke problems
- Plan for sudden weather changes

- A successful prescribed burn depends upon skilled application of fire from a carefully developed prescription for a definite area to accomplish **Specific Objectives.**

Five Steps to a Successful Prescribed Burn

ANALYSIS



PRESCRIPTION

PREPARATION

EXECUTION

EVALUATION

Constraints

- Environmental
- Multiple-Use
- Economic
- Operational
- Administrative
- Legal

Evaluation

Evaluation Questions

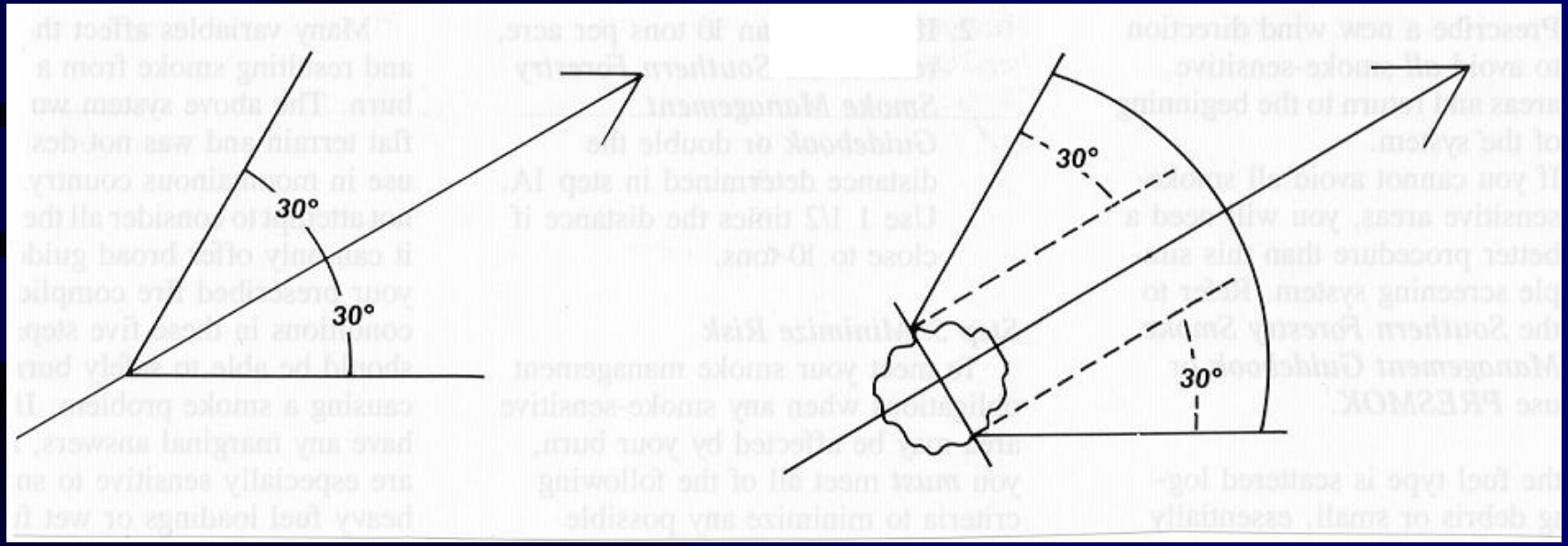
- Were pre-burn preparations made?
- Were objectives met?
- Adherence to burning plan?
- Were conditions of weather fuel, and fire behavior within planned limits?
- Environmental effects on soil, water, air vegetation, and wildlife?

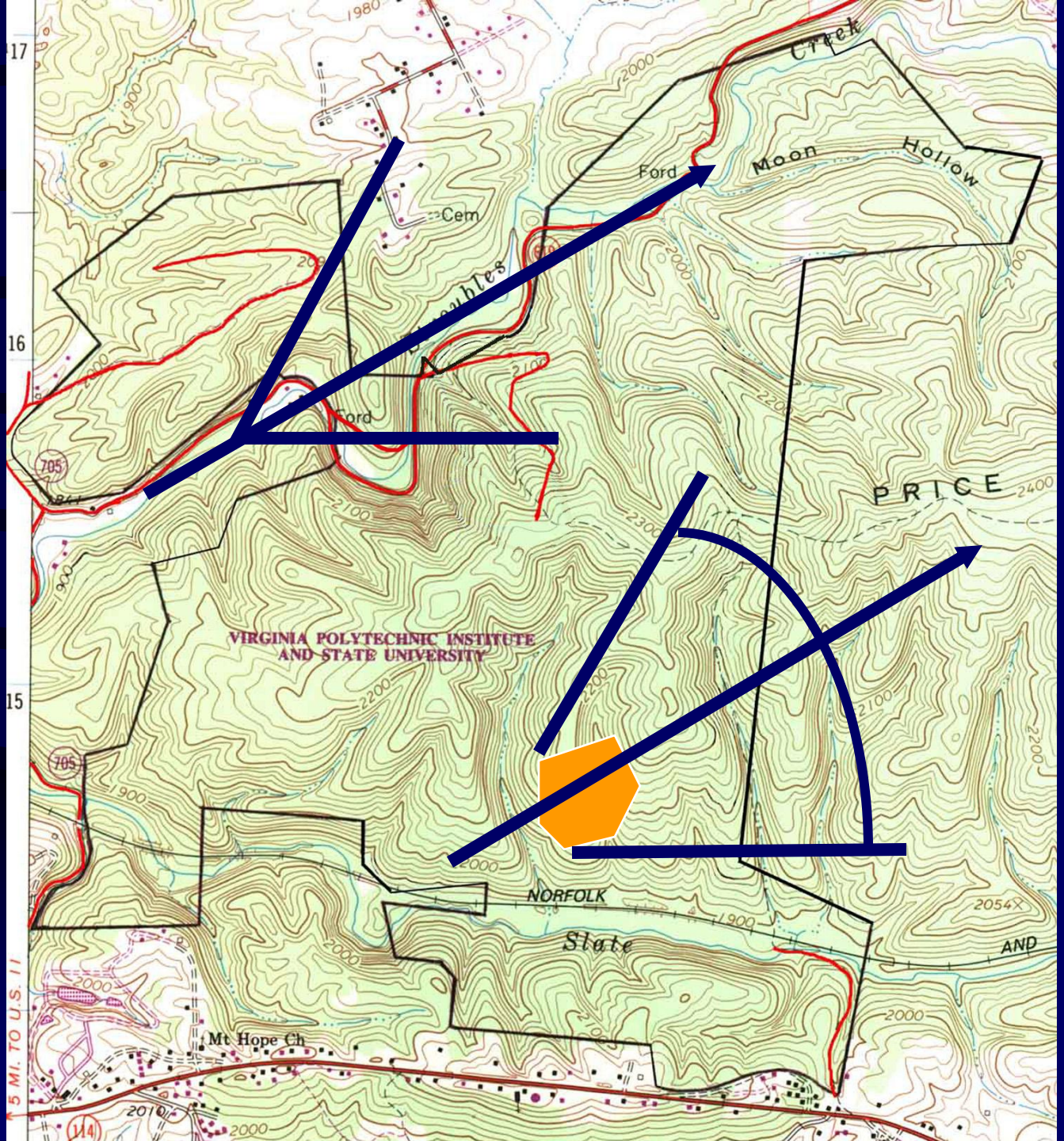
Evaluation Questions (continued)

- Any accidents or near accidents, injuries?
- Fire confined to prescribed area?
- Was burning technique correct?
- Were costs comparable to benefits?

Smoke Screening Plan

Smoke Screening Template

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16
15
Creek
Moon
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PRICE
VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY
705
NORFOLK
Slate
AND
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5 MI. TO U.S. 11
114

I. Location and Identification

Landowner Information

Name:	[redacted]	Phone Number:	
Address:			

Tract Information

County:		Coordinates:					
Location:							
Acres:		Tract #:		Parcel:		Map Attached:	☐ Yes ☐ No
Reason for the burn:	☐ Site Prep	☐ Fuel Reduction	☐ Wildlife				

II. Objectives of the Burn

III. Fire Breaks

IV. Weather

Prescription Conditions

A.	Surface Wind	Direction / MPH	D.	Relative Humidity (%)	
B.	Transport Wind	Direction	E.	Temperature	
C.	Mixing Height (meters)		F.	Cumulative Severity Index	

Burn Day

		Forecast				On Site			
		Day		Night		Prior		At Conclusion	
A.	Surface Wind	Direction	MPH	Direction	MPH	Direction	MPH	Direction	MPH
B.	Transport Wind	Direction	MPH	Direction	MPH				
C.	Mixing Height (meters)								
D.	Relative Humidity (%)								
E.	Temperature								

EVALUATION IMMEDIATELY AFTER THE BURN

Evaluation By	PRINT NAME	SIGNATURE

1.	Acres Burned					
2.	Spotting		Distance (comments)			
3.	Any Escapes					
4.	Objectives Met					
5.	Smoke Problems					
6.	% Understory Vegetation Consumed	☐ < 25%	☐ 26-50%	☐ 51-75%	☐ >75%	
7.	% Material > 3" Diameter Consumed	☐ < 25%	☐ 26-50%	☐ 51-75%	☐ >75%	
8.	% Of Area With Crown Discoloration	☐ < 25%	☐ 26-50%	☐ 51-75%	☐ >75%	
9.	Live Crown Consumption					
10.	Adverse Publicity					
11.	Remarks					

FUTURE EVALUATION


Questions?


I smell smoke, so sumthin' must be on fire.
FIRE PATROL
www.russmo.com 6-02

- **New Paltz, NY**—November 30, 2005—The first series of prescribed burns in the Shawangunks in over twenty-five years were successfully completed last week at the Spring Farm area of the Mohonk Preserve by the Shawangunk Ridge Biodiversity Partnership.

- One of the two line bosses for the burn discusses individual assignments with her crew before heading out to the field. Prior to the burn, all crew members are given a detailed briefing by the burn boss on safety, planned tactics, expected fire behavior, emergency procedures and more.

- A test fire is lit on the downwind side of the field so that fire and smoke behavior can be evaluated. If the observed behavior is not consistent with the conditions outlined in the prescribed burn plan, the fire is extinguished and the burn is not conducted.

- The burn boss reviews the final ignition pattern with a group of igniters. All crew members on the burn are specially trained to the same standards as federal wildland firefighting crews; becoming a qualified burn boss requires years of additional training and prescribed burning experience.

- Holding crews use hand tools and backpack water pumps to ensure that flames do not creep across the fire break. Wildland fire suppression engines are on hand as backup in the event that more water is needed to keep the fire under control.

- Once downwind firebreaks are secure, igniters move across the field in parallel strips. Igniting multiple lines of fire generates additional heat, which helps the fire carry through the field more quickly and disperses smoke more effectively.

- After the interior of the field is lit, holding crews ignite along the remaining firebreaks to completely ring the burn unit. Heat from the fire in the middle of the field draws the flames in from the firebreaks and the fires converge, consuming all remaining fuel and extinguishing the burn.

- Two lines of flame, moving in from opposite sides of the burn unit, burn up all of the available fuel and go out. Once the fire burns itself out, the crews begin the process of "mop-up", moving through the unit and systematically extinguishing any smoldering material.

- Only 17 days following the fire, the field is quickly recovering. Consistent with the management objecties of the burn, nearly all of the small saplings invading the field have been killed back while larger trees remain unharmed. Grasses and herbs, fertilized by a pulse of nutrients released during the fire, sprout quickly and vigorously within just a few days of the burn.